

REMARKS

Claims 1-18 were pending in the above-identified application.

In the office action of June 11, 2003, claims 1-18 were rejected and the specification is objected to.

In response, claims 1, 3, 7 and 12 were amended. Claims 2, 4, 10 and 15 were canceled. The specification has been amended.

A. Specification Objection:

The specification has been amended according to the Examiner's suggestion. Applicants respectfully request the rejection has been overcome and it be withdrawn.

B. §102 Rejections:

Claims 1-16 were rejected under 35 U.S.C. §102(a) as being anticipated by CAPLUS abstract for Prosini et al. "Improved electrochemical performance of Li_xFePO_4 -based composite cathode", *Electrochimica Acta* (2001), 46(3), pp. 3517-3523. Claims 1, 3, 5-9, 11-14, and 16-18 were rejected under 35 U.S.C. §102(e) as being anticipated by Barker et al. (U.S. Patent No.: 6,528,033 B1). Applicants respectfully traverse these rejections.

Independent claims 1, 3, 7 and 12 recite a cathode active material composed of a compound having a general formula Li_xFePO_4 where $0 < x < 1.0$, and a carbon material, with a carbon content per unit weight being not less than 3 wt% and with a powder density being not lower than 2.2 g/cm³, wherein the carbon material is such that, with an intensity areal appearing in a number of waves of 1350 to 1360 cm⁻¹ and an intensity areal appearing in the number of waves of 1570 to 1590 cm⁻¹ in the Raman spectrometry being D and G, respectively, an intensity areal ratio A of D to G is ≥ 0.30 .

In contrast, while the CAPLUS abstract discloses a nonaqueous electrolyte cell comprising a lithium ion phosphate based composite cathode and Barker et al discloses a non-aqueous electrolyte cell having a cathode including a cathode active material and a carbon material, neither of them discloses carbon material wherein, with an intensity areal appearing in a number of waves of 1350 to 1360 cm^{-1} and an intensity areal appearing in the number of waves of 1570 to 1590 cm^{-1} in the Raman spectrometry being D and G, respectively, an intensity areal ratio A of D to G is ≥ 0.30 .

The particle size and condition of the cathode active material is extremely important to the electronic conductivity. If the particle size and condition of the cathode active material is larger, the specific surface areal of the cathode active material is decreased. If the specific surface areal of the cathode active material is small, the reciprocal contact areal in the cathode active material is decreased which lowers the discharge capacity. On the contrary, with the present cathode active material, the specific surface areal of the cathode active material is larger and hence the reciprocal contact areal in the cathode active material is larger, thereby improving the electronic conductivity of the cathode active material. The present cathode active material thus is superior in electronic conductivity.

The examiner is requested to refer to Comparative Example 10 and Example 16 which evidence that although two similar methods can be used to produce the carbon active materials, the resultant materials have very different characteristics. The intensity areal ratios are 26 and .26, respectively.

Neither of the references discloses a carbon material wherein, with an intensity areal appearing in a number of waves of 1350 to 1360 cm^{-1} and an intensity areal appearing in the number of waves of 1570 to 1590 cm^{-1} in the Raman spectrometry being D and G, respectively, an intensity areal ratio A of D to G is ≥ 0.30 .

Accordingly, Applicants' invention is not anticipated under 35 U.S.C. §102(a) or §102(e) over CAPULSA and Barker et al. Applicants respectfully submit these rejections have been overcome and request that they be withdrawn.

Claims 5-6, 8-9, 11 and 13-14 all depend directly from claims 1, 3, 7 and 12 and are therefore allowable for at least the same reason that claims 1 and 16 are allowable.

C. §103(a) Rejection:

Claims 2, 4, 10 and 15 were rejected under 35 U.S.C. §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Barker et al.

Claims 2, 4, 10 and 15 have been cancelled.

Applicant respectfully submits that the rejection has been overcome and requests that it be withdrawn.

D. Double Patenting

Claims 1-6 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 6 of copending Application No. 09/969,220 in view of Barker et al. Applicants respectfully traverse this rejection.


Applicant submits a terminal disclaimer herewith to overcome the rejection.

Applicant respectfully submits that the rejection has been overcome and requests that it be withdrawn.

In view of the foregoing, it is submitted that the pending claims 1, 3, 5-9 and 11-14 are patentable over the references cited by the Examiner. Further, all of the Examiner's objection and rejections have been addressed herein. It is, therefore, submitted that the application is in condition for allowance. Notice to that effect is respectfully requested.

Respectfully submitted,

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